Amendments to the Specification:

Please replace the paragraph beginning at page 28, line 14 with the following rewritten paragraph:

--Fig. 3 represents a hierarchal control architecture that may be implemented by the computer controller 12 of Fig. 2 for controlling the pumping rates in the hemofiltration system 10 to perform an ultrafiltration or hemodialysis procedure, referred to hereinafter collectively as an ultrafiltration procedure. Because of the commonality of many of the system components in Fig. 3, vis-a-vis the system depicted in Figs. 1 and 2, like reference numerals are intended to indicate like components. Furthermore, the system components in Fig. 3 operate in the same manner as the corresponding system components shown in Figs. 1 and 2 and described hereinabove. The ~~heirarchal~~ hierarchal control architecture disclosed herein is further described in "Intelligent Control of Continuous Venovenous Hemofiltration," Efrain O. Morales, Master's Thesis, University of Cincinnati, Department of Electrical & Computer Engineering and Computer Science, and in "Hierarchical Adaptive and Supervisory Control of Continuous Venovenous Hemofiltration," Efrain O. Morales, Marios M. Polycarpou, Nat Hemasilpin, and John. J. Bissler, submitted to IEEE Transactions on Control Systems Technology, to be published, both of which are hereby incorporated by reference in their entirety.--

Please replace the paragraph beginning at page 47, line 8 with the following rewritten paragraph:

--The following examples are simulated ~~ultrafiltation~~ ultrafiltration procedures performed with an ultrafiltration system having adaptive ~~controll~~ control and supervisory ~~controll~~ control, as described above, wherein either tap water or expired blood functioned as a virtual patient. Since the pump model utilized is based on actual fluid weights or flows and not from pump roller angular speeds, the control performance is independent of the fluid's rheology. While the range of achievable flows may change, the type of fluid used for the simulations is irrelevant from the point of view of flow tracking.--